ELEMENTARY PHYSICS & CHEMISTRY (THEORY) Course Code: PMS.001T Credit Hours: 3 Semester: I

SECTION I: ELEMENTARY PHYSICS

UNIT - I: PHYSICAL WORLD Different System of Units (CGS and SI) **Fundamental Quantity** SI Units **UNIT - II: MATTER AND ITS NATURE BEHAVIOUR** Matter - Solid, Liquid and Gas; Characteristics Change in state of matter: Evaporation, condensation and sublimation **UNIT –III: MOTION Rest and Motion** Speed and Velocity Acceleration **UNIT - IV: FORCE AND LAWS OF MOTION** Balanced and unbalanced Force First law of Motion Second law of motion Third Law of Motion UNIT -V: OPTICS **Reflection of light Refraction of light** Image formations (By mirror and lens) Magnification, Power of a lens Refraction and dispersion of light through a prism. Scattering of light – blue colour of the sky and reddish appearance of the sun at sunrise and sunset **UNIT - VI: ATOM AND NUCLEI** Composition and size of nucleus, atomic masses, isotopes, isobars; isotones. Radioactivity - alpha, beta and gamma particles/rays and their properties Applications of radioactivity. Electromagnetic Waves.

SECTION II: ELEMENTARY CHEMISTRY

UNIT – I: SOME BASIC CONCEPTS OF CHEMISTRY

General Introduction: Importance and scope of chemistry.

Elements, Compounds, Mixture: Heterogeneous and homogenous

UNIT –II: STRUCTURE OF ATOM

Thompson Model & its Limitation

Rutherford's model & Its limitation

Bohr's Model & Its Limitation

Dalton's Atomic Theory

Concept of Shells and subshells & Orbital Rule

UNIT - III: MODERN PERIODIC TABLE

Significance & Classification upto 20 elements (Periodic Table)

Atomic Number, Valency & Electronic configuration, Atomic & molecular masses

Laws of Chemical Combination, atoms and molecules.

UNIT-IV: ACID, BASE AND SALT

Definitions and General Properties

Concept of pH and its importance in everyday life

UNIT – V: CHEMISTRY IN EVERYDAY LIFE

Chemicals in medicines – analgesics, tranquilizers, antiseptics, disinfectants, antimicrobials,

antifertility drugs, antibiotics, antacids, antihistamines.

Chemicals in food – preservatives, artificial sweetening agents, elementary idea of antioxidants. Cleansing agents – soaps and detergents, cleansing action.

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
		TOTAL	MARKS	50

PHYSICS OF RADIOGRAPHIC EQUIPMENTS (THEORY) Course Code: RAD.003T Credit Hours: 3 Semester: I

UNIT-I: Main Electric Supply and Distribution /Diagnostic X-ray Circuits & Generators

- Filament current and voltage, X-Ray circuits (primary circuit, auto transformer), types of exposure switch and timers, principle of automatic exposure control (AEC) and practical operation, filament circuit, high voltage circuits, half wave, full wave rectification, three phase circuits.
- Types of generators,

UNIT- II : Exposure Timers /AEC

- The electronic timer, Automatic exposure control – photo timer.

UNIT- III : Specialized X-Ray Generators

- High Frequency, Shared generators

UNIT- IV : Cassettes , Grid & Filters

 Structure and function, Types - single, gridded, film holder, Design features and consideration with loading/unloading, Care and maintenance (cleaning)

Grid: Purpose and function, effect on radiation exposure, use of grid, structure and materials.

UNIT- VI : Intensifying Screens

 Structure and functions, common phosphors used for determination of relative speeds, types, screen mounting, care and maintenance of film screen contact.

UNIT- VII : Radiographic Film

 Structure, properties of different parts, handling, film wrappings. Handling of exposed and unexposed films, Types, applications, advantages/limitations of different types

UNIT- VIII : Diagnostic X-ray tubes

 Advances in X-Ray tubes, anode angulation and rotating tubes. Common factors affecting thermionic emission, specialized types (metallic, biangular, fluoro, CT) focal spot size, speed of anode rotation, target angle, inherent filtration, Interlocking and X-Ray tube overload protection. Heat dissipation methods, tube rating, heat units, operating conditions, maintenance

PHYSICS OF RADIOGRAPHIC EQUIPMENTS (PRACTICAL) Course Code: RAD.003P Credit Hours: 2

- Demonstration of equipments & their working

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
		TOTAL	MARKS	50

S. No.	Particulars	Marks
1	Log Book	5
2	Attendance	10
3	Internal (1 st ,2 nd Hourly & Mid-term)	10
4	Viva-voce	25
	TOTAL MARKS	50

INTRODUCTION TO RADIOLOGY & DARK ROOM TECHNOLOGY (THEORY) Course Code: RAD.004T Credit Hours: 3 Semester: I

UNIT-I : Dark Room: The processing area

- Dark room design: construction & illumination
- Entrance safe lighting: types. Storage, Shelving of films, Cleaning and maintenance

UNIT- II : X-Ray film

- Composition of single and double coated radiographic films
- Structure of emulsion, film characteristics (speed, base + fog, gamma, latitude)
- Latent image formation
 - Image intensifiers and cassettes (structure and function)
 - types of image intensifiers and relative advantage
 - loading and unloading of cassettes and their care/maintenance
- Film storage, handling.

UNIT- III : Film Processing

- Principles: Acidity, Alkalinity, pH, The processing cycle, development, developer solution, Fixing, fixer solution, washing, drying replenishment, checking and adjusting
- Replenishment rates, manual and automatic processing
- Silver recovery
- Auto and manual chemicals

UNIT- IV : Equipment for Film Processing

- Film roller transport transport time, film feed system,
- Importance and relation to temp, fixed and variable time cycles.

UNIT- V: Factors affecting Image Quality

 Meaning of radiographic image contrast, density, resolution, sharpness, magnification and distortion of image, noise and blur.

INTRODUCTION TO RADIOLOGY & DARK ROOM TECHNOLOGY (PRACTICAL) Course Code: RAD.005P Credit Hours: 2

- Demonstration of various techniques as per theory syllabus

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
		TOTAL	MARKS	50

S. No.	Particulars	Marks
1	Log Book	5
2	Attendance	10
3	Internal (1 st ,2 nd Hourly & Mid-term)	10
4	Viva-voce	25
	TOTAL MARKS	50

FUNDAMENTALS OF RADIOLOGICAL IMAGING & TECHNOLOGY (THEORY) Course Code: RAD.005T Credit Hours: 3 Semester: I

UNIT - I

- Properties of Light,
- Uses of Light in Medicine, Lasers and Holography,

UNIT - II : Diagnostic X-ray tubes

- Introduction to X-Rays
- Properties of X- Rays
- X-Ray production
- Bremstrauhlung phenomenon
- factors affecting X-Ray emission spectra
- X-Ray quality and quantity
- HVL measurements, filtration, reflection and transmission targets
- requirements for X-Ray production, tube voltage, current, space charge, early X-Ray tubes (coolidge tubes, tube envelop and housing) cathode assembly,

UNIT- III

 SI unit, various physical/radiation quantity used in diagnostic radiology and its unit (for example, KvP, mA, mAS, Heat unit (HU), Radiation exposure, Absorbed dose, Equivalent dose, etc.).

UNIT- IV

- Radioactivity : Structure and property of nucleus
- Radioactive decay, law of radioactive decay (decay equation, half-life, mean life)
- Excitation & ionization
- characteristic X-Ray
- Naturally occurring radio-nuclides

FUNDAMENTALS OF RADIOLOGICAL IMAGING & TECHNOLOGY (PRACTICAL) Course Code: RAD.005P Credit Hours: 2

- Demonstration of various techniques as per theory syllabus

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
		TOTAL	MARKS	50

S. No.	Particulars	Marks
1	Log Book	5
2	Attendance	10
3	Internal (1 st ,2 nd Hourly & Mid-term)	10
4	Viva-voce	25
	TOTAL MARKS	50

ELEMENTARY BIOLOGY (THEORY) Course Code: PMS.006T Credit Hours: 2 Semester: I

UNIT – I: BIODIVERSITY

Need for classification, Characteristics of Life Levels of Organization for Living things, Bionomial Nomenclature Tools for study of Taxonomy: Museums, Zoos, Herberia, Botanical Gardens Five Kingdom Classification - Salient features UNIT – III : HUMAN PHYSIOLOGY

Digestion and absorption:

Alimentary canal and digestive glands; Role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats;

Calorific value of proteins, carbohydrates and fats, Egestion.

Breathing and Respiration: Respiratory organs, Mechanism of breathing and its regulation in humans– Exchange of gases, transport of gases and regulation of respiration Body fluids and circulation.

Blood: Composition of blood, blood groups, coagulation of blood; Composition of lymph and its function; *Human circulatory system*– Structure of human heart and blood vessels; Cardiac cycle, cardiac output, ECG; Double circulation

Excretory products and their elimination, Modes of excretion – Ammonotelism, ureotelism, uricotelism;

Human excretory system-structure and function; Urine formation, Osmoregulation; Regulation of kidney function- Renin-angiotensin, Atrial Natriuretic Factor, ADH and Diabetes insipidus

Locomotion and Movement: Types of movement – ciliary, flagellar, muscular;

Skeletal muscle – contractile proteins and muscle contraction; Skeletal system and its function *Neural control and coordination*:

Neuron and nerves; Nervous system in humans– central nervous system, peripheral nervous system and visceral nervous system; Generation and conduction of nerve impulse; Reflex action.

Chemical coordination and regulation: Endocrine glands and hormones; Human endocrine system-

Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary Idea); Role of hormones as messengers and regulators, Hypo-and hyperactivity and related disorders

UNIT - V: ECOLOGY & ECOSYSTEM

Organism & Environment: Habitat & Niche

Population Interaction: Mutualism, Competition, Predation & Parasitism

Population Attributes: Growth Rate, Birth Rate, Death Rate

Ecosystem: Patterns, Components; Productivity& Decomposition; Energy Flow; Pyramids of number,

Biomass, energy

Nutrient Cycling: Carbon, Phosphorus, Nitrogen

Types of Questions	Total No. of	No. of Questions to be	Marks	Subtotal
	Questions	attempted		
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
TOTAL MARKS				50

INTRODUCTORY BIOLOGY (THEORY) Course Code: PMS.007T Credit Hours: 2 Semester: I

UNIT-I: LIVING WORLD

- Introduction to Biology
- Branches of Biology:- Anatomy, Biochemistry, Physiology, Biophysics, Biotechnology, Botany, Cell Biology, , Epidemiology, Genetics, Histology, Homology, Microbiology, Pathology, Parasitological, Pharmacology, Physiology, Virology, Zoology, Molecular Biology, Mycology, Neurobiology, Developmental Biology.
- Scope of Biology & Career Options.
- Characteristics of Living Organisms: Elementary area of Metabolism, Transfer of energy at molecular levels, Open & Closer system, Homoeostasis, Growth & Reproduction, Adaptation
 - Survival & Death

Cell Theory

- Difference b/w Prokaryotic cell and Eukaryotic Cell
- Brief Introduction to the cell Organelles and their functions

UNIT -IV: CELL DIVISION

Brief Introduction

- Mitosis
- Meiosis

UNIT – V: MOLECULES OF CELL

- Carbohydrates: Classification& Functions
- Amino Acids(only names):Classification & Functions
- Proteins: Classification, structure & functions
- Lipids: Classification & Functions
- Enzymes: Classification, Properties & functions
- Vitamins: Classification
- Nucleic Acid: Types

UNIT - VI: GENETICS

DNA:

DNA as a genetic material

- Chemical properties of DNA
- Nitrogenous Bases(Purines and Pyrimidines)
- Watson & Crick Model of DNA
- Chargaff Rule

RNA:

- Types and their functions
- Difference between DNA & RNA
- Brief introduction to Transduction and Translation

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
		TOTAL	MARKS	50

ENVIRONMENTAL STUDIES (THEORY) Course Code: PMS.008T Credit Hours: 2 Semester: II

UNIT-I : NATURAL RESOURCES

Renewable and non-renewable resources: Natural resources and associated problems.

- Forest resources ,
- Water resources
- Mineral resources
- Food resources
- Energy resources

UNIT-II : ECOSYSTEMS

- Concept of ecosystems, Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Food chains, food webs and ecological pyramids.

UNIT-III: ENVIRONMENTAL POLLUTION

- *Definition, Cause, effects and control measures of :* Air pollution, Water pollution, Soil pollution, Noise pollution, Thermal pollution
- Role of an individual in prevention of pollution.
- *Disaster management:* floods, earthquake, cyclone and landslides.

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
		TOTAL	MARKS	50

GENERAL RADIOLOGY – POSITIONING (THEORY) Course Code: RAD.009T Credit Hours: 3 Semester: II

POSITIONING- (BASIC VIEWS)

UNIT- I Upper extremity - basic views UNIT-II Lower extremity (including pelvis) - basic views UNIT-III Chest including thoracic age and sternum UNIT-IV Spine - Cervical, dorsal, lumbar, lumbo-sacral (including functional views). UNIT-V Skull – including trauma cases UNIT-VI Facial bones (nasal bones, zygomatic, orbits, maxilla) UNIT-VII Mandible, Temporo-Mandibular Joints, Mastoids, petrous temporal bones UNIT – VIII Abdomen - erect, supine, lateral decubitus UNIT-IX Dental radiography UNIT – X General Pediatric Radiography

GENERAL RADIOLOGY – POSITIONING (PRACTICAL) Course Code: RAD.009P Credit Hours: 2

- Demonstration of various techniques as per theory syllabus
- -

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
TOTAL MARKS 50				50

S. No.	Particulars	Marks
1	Log Book	5
2	Attendance	10
3	Internal (1 st ,2 nd Hourly & Mid-term)	10
4	Viva-voce	25
	TOTAL MARKS	50

RADIOLOGICAL FILMS (THEORY) Course Code: RAD.010T Credit Hours: 3 Semester: II

UNIT-I -X-ray film -Construction and design of X-ray film UNIT- II Classification of X-ray films UNIT- III Cassette-construction **UNIT-IV** Intensifying Screen UNIT- V Safe Light UNIT- VI **Developer and Fixer** UNIT- VII Manual Processing UNIT-VIII **Automatic Processing**

RADIOLOGICAL FILMS (PRACTICAL) Course Code: RAD.010P Credit Hours: 2

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of	No. of Questions to be	Marks	Subtotal
	Questions	attempted		
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
		TOTAL	MARKS	50

S. No.	Particulars	Marks
1	Log Book	5
2	Attendance	10
3	Internal (1 st ,2 nd Hourly & Mid-term)	10
4	Viva-voce	25
	TOTAL MARKS	50

RADIATION SAFETY & HAZARDS (THEORY) Course Code: RAD.011T Credit Hours: 3 Semester: II

UNIT – I : Radiation protection

- Principles of radiation protection
- Time distance and shielding, shielding calculation and radiation survey, Personnel dosimeters (TLD and film batches), occupational exposure, radiation protection of self and patient,
- ICRP, NRPB, NCRP and WHO guidelines for radiation protection.
- Revision of Somatic & Genetic Radiation effects, Units Detection & measurements Radiation protection Standards, radiation surveys & regulations. Patient Protection

UNIT –II : Biological effects of Ionizing Radiation

- Ionization, excitation and free radical formation, hydrolysis of water,
- Action of radiation on cell, DNA, RNA, chromosome, tissue and organ, cytoplasm, cellular membranes, effects of whole body and acute irradiation.

UNIT- III : Biological effects of non-ionizing radiation

– Ultrasound, Sound lasers, IR, UV, Magnetic fields

RADIATION SAFETY & HAZARDS (PRACTICAL) Course Code: RAD.011P Credit Hours: 2

- Demonstration of various techniques as per theory syllabus

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
TOTAL MARKS 50				

SCHEME OF EXAMINATION - THEORY

S. No.	Particulars	Marks
1	Log Book	5
2	Attendance	10
3	Internal (1 st , 2 nd Hourly & Mid-term)	10
4	Viva-voce	25
	TOTAL MARKS	50

COMMUNICATION SKILLS Course Code: PMS.012T Credit Hours: 2 Semester: II

UNIT – I Essentials of grammar Parts of speech:

- Articles
- Nouns
- Pronouns
- Adjective
- Verb/Adverb
- Preposition, Conjuctions, Interjections

UNIT- II

Nature, scope & process of communication:

- Definition
- Process
- Various Models
- Elements
- Essential Flow of Communication
- Media of Communication
- Barriers/Factors inhibiting communication.

UNIT – III

Formal Conversations:

Meetings; Duties of participants; Interviews; Group Discussions.

UNIT- IV

Essay & Precis Writing

• Comprehension

UNIT – V

Formal & Informal Letters.

Type of Questions	Total No. of Questions	No. of Questions to be attempted	Marks (each Question)	Subtotal
SEC –A	1	1	1	10
(Comprehensive)				
SEC – B	8	5	2	10
(Short Answer)				
SEC – C	3	1	10	10
(Essay writing)				
SEC-D	1	1	10	10
(Precis writing)				
SEC-E	2	1	10	10
(Letter writing)				
			Total Marks	50

COMPUTER BASICS (THEORY) Course Code: PMS.013T Credit Hours: 2 Semester: II

UNIT –I

Input and Output UNITs: Their functional characteristics, main memory, cache memory read only memory, overview of storage devices – floppy disk, hard disk, compact disk, tape.

Computer Networks and Communication: Network types, Network topologies, Network communication devices, Physical communication media, TCP/IP.

Internet and its Applications: E-mail, Telnet, FTP, WWW, Internet chatting

UNIT-II

World Wide Web (www) - History, Working, Web Browsers, Its functions, Concept of Search Engines, Searching the Web, HTTP, URLs, Web Servers, Web Protocols.

UNIT-III

MS Office: word, paint ,power point & excel; acrobat reader

UNIT-IV

Computer Viruses : Introduction, working of viruses, Categorization of computer viruses, Antivirus & its working, Virus identification techniques.

UNIT –V

Information system : definition, components & types of information system

Operational support systems & support to knowledge work

Management support systems

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
		TOTAL	MARKS	50

GENERAL RADIOLOGY- SPECIAL SITUATIONS (THEORY) Course Code: RAD.014T Credit Hours: 3 Semester: III

Conventional – NON-CONTRAST- Special Situations

UNIT - I : Pediatric Radiography

- Special needs of patient and radiographer equipment considerations (use of dedicated equipment and accessories)
- Technical considerations the need to modify "adult" techniques selection of exposure factors

UNIT- II : Geriatric Radiography

- Understanding patient profile
- Possible difficulties during radiography
- Technical considerations need to carry out standardised projections in unconventional position

UNIT- III : Trauma/Emergency Radiography

- Limb fractures
- Fracture of thoracic cage, spine, skull
- Lung collapse
- Selection of suitable X-Ray equipment
- Patient position
- Modification of routine positioning,

UNIT- IV: Radiography in Pregnant Patients

- Special needs of patient and radiographer equipment considerations (use of dedicated equipment and accessories)
- Radiation protection of the patient & the fetus
- Special techniques peculiar to Pregnant Patients

GENERAL RADIOLOGY- SPECIAL SITUATIONS (PRACTICAL) Course Code: RAD.014P Credit Hours: 2

- Demonstration of various techniques as per theory syllabus

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
		TOTAL	MARKS	50

S. No.	Particulars	Marks
1	Log Book	5
2	Attendance	10
3	Internal (1 st ,2 nd Hourly & Mid-term)	10
4	Viva-voce	25
	TOTAL MARKS	50

EQUIPMENTS OF MODERN IMAGING TECHNOLOGY (THEORY) Course Code: RAD.015T Credit Hours: 3 Semester: III

UNIT- I C.R : Principle, Equipment & Imaging UNIT- II Digital Radiography: Principle, Equipment & Imaging UNIT- III Mammography: Basic principle, Equipment & Image acquisition UNIT- IV CT - Basic physics – Tomography principle - basics of plain studies, contrast studies, Special Procedures. UNIT- V MRI -basic principle – imaging methods UNIT- VI USG -Basic acoustics - ultrasound terminologies UNIT-VII: Positron Emission Tomography: PET, PET/CT, and/or SPECT/CT scan for oncology, cardiac and/or brain imaging .

EQUIPMENTS OF MODERN IMAGING TECHNOLOGY (PRACTICAL)

Course Code: RAD.015P

Credit Hours: 2

Demonstration of various techniques as per theory syllabus

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
TOTAL MARKS 50				50

SCHEME OF EXAMINATION - THEORY

S. No.	Particulars	Marks
1	Log Book	5
2	Attendance	10
3	Internal (1 st ,2 nd Hourly & Mid-term)	10
4	Viva-voce	25
	TOTAL MARKS	50

INTERVENTIONAL & DIGITAL RADIOGRAPHY (THEORY) Course Code: RAD.016T Credit Hours: 3 Semester: III

UNIT-I: Mammography

Anatomy and Physiology of female breast Imaging requirements, Equipment - tube, compression, grids, UNIT – II : Digital Imaging, Digital Radiography and PACS

Digital Radiography Systems

- Image acquisition
- Archiving possibilities
- Transfer system and designs
- Digital Spot Imaging (DSI)
- Digital chest radiography
- Future developments

UNIT – III : Angiography Systems

- Equipment (present and past)
- Serial imaging devices
- Subtraction process, (contrast media)
- Accessories and choice catheters, guide wires.
- Intervential Angiography: Accessories and uses e.g coils/stents

UNIT – IV : Pressure Injectors:

- Types, Programming, Injection, Protocols, Uses

UNIT – V : Film Archieving Systems

- Image recording devices
- Laser imager/camera-functioning.
- Automatic film handling systems
- Optical Disc System (ODS)

INTERVENTIONAL & DIGITAL RADIOGRAPHY (PRACTICAL) Course Code: RAD.016P Credit Hours: 2

- Demonstration of various techniques as per theory syllabus

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
TOTAL MARKS				50

S. No.	Particulars	Marks
1	Log Book	5
2	Attendance	10
3	Internal (1 st ,2 nd Hourly & Mid-term)	10
4	Viva-voce	25
	TOTAL MARKS	50

ADVANCED RADIODIAGNOSTIC TECHNIQUES (THEORY) Course Code: RAD.017T Credit Hours: 3 Semester: III

UNIT – I : Advanced Computerized Tomography (CT)

- Introduction to historical background
- Various generations of scanners
- Advancement in CT technology (helical/spiral and multi slice)
- Ultra fast scanners System components
- CT performance parameters
- Image quality and methods of image reconstruction,
- Image display, storage, recording system CT control console, Options and accessories for CT systems
- Tools for use in CT guided Interventional procedures.
- Dosimetry
- Image quality in CT
- Future developments

UNIT – II : CT

- Head and neck, Thorax , Abdomen , Pelvis , Musculo-skeletal system , Spine , PNS
- Clinical indications and contraindications
- Patient preparation technique

UNIT – III : Diagnostic Ultrasound

- Basics of sound propagation in different media
- Transmission of pulse and echo modes
- Doppler Ultrasonography, A, B and M scanning modes.
- Ultrasound image formation and storage/documentation devices.

ADVANCED RADIODIAGNOSTIC TECHNIQUES (PRACTICAL) Course Code: RAD.017P Credit Hours: 2

- Demonstration of various techniques as per theory syllabus

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
		TOTAL	50	

S. No.	Particulars	Marks
1	Log Book	5
2	Attendance	10
3	Internal (1 st ,2 nd Hourly & Mid-term)	10
4	Viva-voce	25
	TOTAL MARKS	50

COMMUNITY HEALTH Course Code: PMS.018T Credit Hours: 2 Semester: III

- General concepts of health and diseases with reference to natural history of disease with prepathogenic and pathogenic phase. The role of socio-economic and cultural environment in health and diseases-Epidemiology and scope.
- Public health administration-An overall view of the health Administration set up at centre and state level.
- The National Health Programmes- National Health programmes including tuberculosis, malaria, MCH and HIV/AIDS.
- Health problems in vulnerable groups-Pregnant and lactating women and infants and school going children-occupational groups, geriatrics.
- Occupational Health- Definition, scope-Occupational diseases, prevention of occupational diseases and hazards.
- Social security and other measures for the protection of occupational hazards, accidents and disease. Details of compensation acts.
- Family planning objectives of National family planning methods. A general idea of advantages and disadvantages of the method.
- Mental Health- community aspects of mental health; role of physiotherapists, therapists in mental health problems such as mental retardation etc.
- Communicable disease-An overall view of the communicable disease. Classification according to the principal mode of transmission. Role of insects and their vectors.
- International health agencies.

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
TOTAL MARKS				50

NUTRITION Course Code: PMS.019T Credit Hours: 2 Semester: III

- Introduction to science of nutrition
- Food pattern and its relation to health
- Factors influencing food habits, selection and food stuffs
- Food selection, storage & preservation
- Classification of nutrients macronutrients and micronutrients
- Proteins types, sources requirements and deficiencies of proteins
- Carbohydrates sources, requirements & efficiency
- Fats types, sources, requirements, deficiency and excess of fats
- Water sources of drinking water, requirements, preservation of water
- Minerals types, sources, requirements deficiencies of minerals
- Vitamins types, sources, requirements deficiencies of vitamins
- Planning diets including renal diets

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks	Subtotal
SEC -A: MCQ's	10	10	1	10
SEC -B: Short Answer Questions	7	5	3	15
SEC -C: Short Essay	7	5	5	25
TOTAL MARKS				50